National Institute of Environmental Health Sciences

Social exclusion modifies climate and deforestation impacts on a vector-borne disease

Author(s): Chaves LF, Cohen JM, Pascual M, Wilson ML
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Abstract:

BACKGROUND: The emergence of American Cutaneous Leishmaniasis (ACL) has been associated with changes in the relationship between people and forests, leading to the view that forest ecosystems increase infection risk and subsequent proposal that deforestation could reduce re-emergence of this disease. METHODOLOGY/PRINCIPAL FINDINGS: We analyzed county-level incidence rates of ACL in Costa Rica (1996-2000) as a function of social and environmental variables relevant to transmission ecology with statistical models that incorporate breakpoints. Once social marginality was taken into account, the effect of living close to a forest on infection risk was small, and diminished exponentially above a breakpoint. Forest cover was associated with the modulation of temporal effects of El Nino Southern Oscillation (ENSO) at small spatial scales, revealing an additional complex interplay of environmental forces and disease patterns. CONCLUSIONS/SIGNIFICANCE: Social factors, which previously have not been evaluated rigorously together with environmental and climatic factors, appear to play a critical role that may ultimately determine disease risk.

Source: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2238711

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

El Nino Southern Oscillation, Precipitation

Geographic Feature:

resource focuses on specific type of geography

Other Geographical Feature

Other Geographical Feature : Forest

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Non-U.S. North America

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Fly-borne Disease

Fly-borne Disease: Leishmaniasis

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Low Socioeconomic Status

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified